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ABSTRACT

A study reviewed coverage in 13 newspapers during 1989 of the issue of spraying the pesticide Alar on apples. Using VU/TEXT, a newspaper database, 297 articles in 13 newspapers that included the specified code words "Alar" with or without "apple" or "apples" were retrieved and analyzed using a 33-question coding instrument which recorded general information about the coverage and risk information crucial to the reporting of such an issue. Results indicated that for the most part the newspapers treated the Alar story as a hard news event, without detailed analysis of the core of the controversy--the risk issues. Four papers from apple-growing regions provided generally better coverage of the issue than did those from non-apple regions. Results also indicated that although the Alar issues had major economic and other impacts, and perhaps because of the complexity of risk matters, reporters covered the conflict itself rather than the science behind the conflict. Results showed that the media did not perform in a socially responsible manner, since they did not present the facts in a meaningful context, clarified and explained. A new model of risk reporting in the mass media should be developed to better serve readers/viewers. (Five tables of data are included; 24 references are attached.) (PRA)

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ALAR AND APPLES:

NEWSPAPER COVERAGE OF A MAJOR RISK ISSUE

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ABSTRACT

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During 1989, a major environmental and health risk issue, the spraying of Alar on apples, created a furor among the American people. After hearing charges from the Natural Resources Defense Council (NRDC) that eating Alar-laden apples significantly increased a child's risk of developing cancer, numbers of school districts dropped apples from their menus and parents poured apple juice down the drains. Apple sales plummeted.

The NRDC's charges, which were disseminated by a well-planned and effective public relations campaign, brought countercharges from the U.S. Environmental Protection Agency,which accused the NRDC of basing its study on poor data, among other things. The core of the dispute was in the risk figures and risk interpretations being used by each organization.

This study reviewed coverage in 13 newspapers during 1989 of the Alar issue. It found that they produced a total of 297 articles during the year and, for the most part, they treated the Alar story as a hard news event, without detailed analysis of the central core of the controversy--the risk issues. Four newspapers from apple-growing regions provided generally better coverage of the issue than did those from non-apple regions.

Because the Alar issue had major economic and other impacts, and because its central focus dealt with risk matters, it was expected that coverage would be heavy and that health risk concerns would be central. This was not the case. Instead, reporters covered the conflict itself instead of the science behind the conflict. In this risk situation, the media did not perform in a socially responsible manner, since they did not present the facts in a meaningful context and supply "objective reality clarified and explained." The study calls for a new model of risk reporting in the mass media to better serve readers and viewers.

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Fruits and vegetables have always been revered as the cornerstone of a healthy diet. Parents admonish their children for failing to finish their broccoli and common adages like "an apple a day keeps the doctor away" reflect society's understanding of the nutritional value of these foods. But the normally accepted value of wholesome fruits and vegetables was shattered in 1989 by the controversy over a chemical used on apples.

Although experts say the United States' food supply is the safest in the world, a skeptical American public ranks food safety high on its list of concerns (8). In recent years, attention has been focused on the trace amounts of chemicals such as pesticides and herbicides that can be found on some food products. According to a Food Marketing Institute survey conducted in 1989, 82 percent of people polled said that pesticide residues are a serious health hazard (8).

In contrast, experts on food safety and public health maintain that chemical residues do not pose a great danger to consum-

ers. According to Auld, experts from 14 different professional societies bypassed pesticides and ranked pathogenic microorganisms, naturally occurring toxicants and environmental contaminants as the three greatest dangers to food safety (2).

The seeds of controversy regarding the growth regulator, Alar, which created a public stir in the winter of 1989, continue to grow and affect public perceptions of the danger of pesticide residues on food. The Alar debate centered around a report issued by an environmental group, the Natural Resources Defense Council (NRDC), which linked the chemical to increased rates of cancer, particularly in children. As a result, apples--the most American of fruits--were turned by Alar into the poisoned fruit of the Snow White story. The ensuing controversy led schools in New York City, Cincinnati, Atlanta, Chicago, St. Louis, Fairfax, San Francisco, Los Angeles, Spokane and Seattle to ban apples and apple products. There were numerous reports of people pouring apple juice down the drain, including one of a man who called his local health department to ask if apple juice was safe enough to pour down the drain or should he take it to a toxic waste dump (19). Because of its impact on people as well as its controversy and complexity, the Alar story provides an important case study of how well newspapers communicate about risk issues to the public.

A number of studies have shown that a relationship exists between the nature of media coverage of a risk issue and the public's perception of that risk. In one study, Mazur notes that as the nation becomes a spectator to a technical dispute through

the press and television, and there is increasing prominence of the controversy in the media, this is followed by increasing opposition to the technology within the public (13).

Wiegman and colleagues add that the mass media play an important role in inducing images, perceptions of reality and an individual's personal habits concerning well-being and health (22). According to Stallings, the media are one of the most significant factors involved in the social construction of risk. He notes: "By selecting events to report, by interviewing and quoting experts who interpret those events, and by assembling and distributing news products, news organizations create an important component of public discourse (18)."

The media's power in influencing public response to a risk has been the topic of much investigation. Slovic considers the mass media and interpersonal communication the two most important influences on the public concerning risk issues (17). Krimsky and Plough document five case studies in risk communication in which the media play an integral role (11). Hamlin, a public relations manager for Dow Chemical Company, has observed that media coverage of risks results in a general feeling of helplessness in the public. He feels that the media have cried wolf one too many times and the public is no longer able to discern between real hazards and those that are amplified to attract attention and government action. He recounts the disheartening attitude that a health professional encountered among high school students following the Alar scare. "[The health expert] noted in recent weeks that the high school students she advises simply laughed at her comments on the dangers of smoking. Apples cause

cancer too, they said, so we might as well smoke (8)."

Analyses of the content of mass media articles on risk-related issues offer several important insights. In a study of media coverage of bridge collapses, Wilkins and Patterson found that the media make three significant errors of omission. First of all, the media focus on novelty, treating the risk as an event-centered news item without consideration of the history of the risk or previous accidents associated with it. Secondly, Wilkins and Patterson note that the media provide no comprehensive analysis of the social system in which the risk is occurring. Finally, they say that the media fail to use important linguistic tools such as risk comparisons to qualify the variety of interpretations of the risks that are given (24).

Wilkins' study of the U.S. coverage of the Bhopal accident (23) and a study by Friedman, Gorney and Egolf of U.S. coverage of the Chernobyl accident (7) also showed that important risk information was missing. Coverage in both studies was overwhelmingly event-oriented and lacked background information and in-depth analysis that would have provided context and better understanding for readers and viewers.

A study done by the Environmental Risk Reporting Project at Rutgers University found that, for network news, "while journalists sometimes provided excellent coverage of chronic risk issues (such as tobacco and asbestos) they often needed an 'acute' news peg--new and timely information--on which to base their coverage (16)."

Others have found that event-centered reporting leads to the dissemination of worst-case scenarios and imposes a negative bias in the media. Wiegman and colleagues state, "The media are superb at evoking the serious outcomes associated with a specific instance of a hazard, and they have a preoccupation with bad news (22)." They found that newspaper reporting of risks deals mainly with information that has negative consequences for society and individuals.

While striving to achieve objectivity in journalism by offering different and often opposing viewpoints, the media sometimes fail to place the competing perspectives in an understandable context. As a rule, according to Nelkin, the media do not interpret or analyze the differences of opinion, but merely emphasize the conflict arising from them (14).

For example, the media's coverage of toxic chemical stories such as Love Canal and Times Beach focused on the conflict and uncertainty of the risks of exposure to dioxin. Nelkin says, "Reporters tried to deal with uncertainty about the dangers of dioxin by balancing diverse opinions. They dutifully presented different points of view, but they provided little critical analysis that would help readers weigh the validity of these wide-ranging opinions (14)."

In seeking various viewpoints, the media focus on views from the extremes. Yet, such an emphasis in risk reporting can confuse and alarm readers, and in the end, this type of reporting gives the public a simplified view of the risk. William Lowrance

of Rockefeller University notes, "Articles often present the absolutely most polar views but the issues are usually not black and white (3)."

Because they focus on the negative, newsworthy aspects of a risk, the media have been labeled as anti-science and technology. Nelkin reports, "Industry groups and some scientists accuse reporters of taking a biased, sensational, anti-technology approach to reporting risks; they blame the press for creating unwarranted fear of technology (14)."

Much of the criticism from these and other studies implies that the media are not living up to their social responsibility role. As defined by the Hutchins Commission, this role includes providing "an accurate and comprehensive account of the day's news." "The public has the right not only to expect the fact to be presented in a meaningful context but also 'the truth about the fact'; in other words, not merely objective reality, but objective reality clarified and explained (1)." Critics already cited and others frequently complain about the lack of comprehensiveness, clarification and explanation in the media's risk reporting.

Other aspects of the social responsibility theory, added to it as it developed, include three major functions, according to Altschull. The media are supposed to function as adversaries, watchdogs and agenda-setters--"the AWA role of the press," as Altschull terms it (1). How well the media perform these functions concerning environmental risk issues is a matter of debate and the Alar issue provides a good case study from which to

evaluate this performance.

Discussion of the social responsibility role of the media concerning the Alar situation brings numerous questions to mind. Did the media set the public's agenda about Alar and the danger of pesticides on food, with major assistance--or manipulation by--the NRDC? Did they perform their adversarial and watchdog roles? Was the reporting done in the public interest and did it provide not only the news but also a comprehensive picture of the issue and situation? Did the media polarize the issue, treat it only as an event, omit important risk figures and comparisons as well as background information, as they have in reportage of other risk issues? Or did they break these past patterns to provide information that readers and viewers could use to help with decision making--a requirement of being socially responsible, according the Hutchins Commission? These are some of the questions this study seeks to answer. However, before turning to examine the coverage itself, a quick review of the circumstances surrounding the Alar issue will help put the coverage into perspective.

The NRDC, the Environmental Protection Agency (EPA) and the media had all been wrestling with and reporting about pesticide use on foods for some time. The NRDC had been trying to influence pesticide regulation with some measure of success over the years. EPA had been struggling with interpretations of various laws and multi-jurisdictional situations for some time. And the media had reported about pesticide concerns, even about Alar, long before the Alar story swept the nation in 1989.

The issue started quietly in 1989 on February 1, when the EPA announced that based on "interim analyses of new data" on Alar and its metabolite UDMH, it was "accelerating" the process to propose canceling food uses of Alar (4). However, legal cancellation can be a slow process and the NRDC wanted quick action. Months earlier, anticipating the government's slow pace, it decided to develop a major campaign to alert the American public to the dangers of pesticides on food and to pressure the EPA to review the safety of a number of pesticides quickly.

On February 26, the first salvo of the campaign was fired on the television show "60 Minutes," which exclusively broadcast NRDC's charges that there was a high risk of cancer for children from eating apples sprayed with Alar. These charges appeared in a NRDC report, "Intolerable Risk: Pesticides in Our Children's Food," which was released at a press conference the next day in Washington, coordinated to take place simultaneously in 12 other cities across the United States.

Although both the EPA and NRDC agreed that Alar was a problem, they disagreed on how serious that problem was and how fast Alar should be removed from the market. Their conflicting views stemmed from different interpretations of the risk associated with exposure to the chemical because they based their conclusions on different risk figures (9). The NRDC said consumption of Alar would lead to 240 cases of cancer in every one million people who were exposed to it. The EPA said the growth regulator would cause cancer in 45 out of one million people.

The EPA's risk figure, while still above the agency's standard of one-in-a-million persons for carcinogen exposure, was not as high and therefore Alar was not considered an urgent threat. A joint news release issued two weeks after the "60 Minutes" broadcast by the EPA, Food and Drug Administration and U.S. Department of Agriculture said, "EPA believes the potential risk from Alar is not of sufficient certainty and magnitude to require immediate suspension of the use of this chemical (6)."

The EPA charged that there were flaws in the NRDC's risk assessment. The NRDC countered that some of its assertions were based on EPA data. As a result, confusion permeated the debate.

Another press release issued by the EPA said, "NRDC's estimates of risk posed by pesticide residues in food are far out of line with existing data. One example NRDC cites is apples. In particular, EPA's estimate of risk from exposure to Alar on apples are based on more reliable data than used by the NRDC and are considerable lower than the NRDC's values (5)."

The apple industry got into the act by challenging the NRDC's emphasis on Alar's danger to children. It charged that a child would have to eat 28,000 pounds of apples each day to achieve the same level of the carcinogen in Alar that was fed to laboratory animals. The NRDC responded that its risk information took into account the extrapolation of data from animals to humans.

The EPA and the NRDC were at odds with the cancer potency of Alar and estimates of children's eating habits. They also disagreed on the percentage of apples that were treated with Alar.

The EPA reported that approximately 5 percent of the nation's apples were sprayed with Alar. The NRDC said the EPA arrived at this figure with information from apple growers, who have a definite interest in making Alar use seem minimal. Citing other studies of Alar use, the NRDC charged that a more reasonable estimate was closer to 30 percent (9).

From all of these disagreements, it becomes clear that the central point of conflict was concentrated in the basics of risk information. The media's presentation of the risk figures and the emphasis they gave to one or the other organization's views had the potential to greatly affect public reaction.

With these conflicting opinions on the risk of Alar, the media were faced with the difficult task of mediating between two points of view. But the controversy between the NRDC and the EPA brought other influences to bear on the media too.

The NRDC's method of publicizing the Alar threat caused some critics to claim that the media were being manipulated by the environmental group. An article in the Washington Post reports that the NRDC paid "$40,000 to public relations firms on both coasts" to get its report on Alar to the public (21). With the help of the firm, Fenton Communications, the NRDC got the publicity it sought, not only for the NRDC initial report and announcement but for a second wave of coverage a week later when it enlisted Meryl Streep and other celebrities to publicize the formation of Mothers and Others for Pesticide Limits.

According to an article in the Wall Street Journal, the public relations goal of the Alar campaign was to create so many

repetitions of the NRDC message that the public could not avoid hearing it from many media outlets in a short period of time (10). In a discussion of the campaign by Malcolm Tyrrell of the Uniroyal Chemical Company, the company that made Alar, he explains that the campaign was to "target the electronic media and use the print media to echo the story (20)." On television, the NRDC story was covered on two segments of "60 Minutes," the "Donahue Show," multiple appearances on "Today," "Good Morning America" and "CBS This Morning," and several stories each on the network evening newscasts. In magazines, it landed the cover and two stories each in Time and Newsweek, along with stories in People and four women's magazines. Articles appeared in the major prestige newspapers across the country, including three cover stories in USA Today, as well as thousands of repeat stories in local media around the nation and the world (10).

Critics claim that the result of the NRDC's onslaught of publicity was distorted and biased information on Alar. Tyrrell charges that "the media was [sic] manipulated by politico-environmental groups. An unsuspecting public was stormed with half truths and misrepresentations (20)."

Whatever the case, the Alar story had a major impact on people and various groups in American society. It was a risk story of major proportion because it included images to evoke emotional responses and it had staying power to keep it in the news over a long period of time. The central issue was risk, and therefore the type of risk information provided in newspaper articles and the interpretation of this information is the primary focus of this paper.

RESEARCH METHODS

This survey of newspaper coverage of the Alar issue covers all of 1989, from the initial breaking of the story by the EPA and NRDC in February, through its development with heavy coverage in March, through follow-up coverage in May and June, and business reports of the repercussions in the apple industry in the fall of the year. Using VU/TEXT, a newspaper database, 297 articles in 13 newspapers that included the specified code words "Alar" with or without "apple" or "apples" were retrieved. While VU/TEXT may not have provided the universe of Alar articles for the 13 newspapers, those studied should represent almost all of 1989's Alar coverage for these newspapers.

The newspapers were selected to represent different groups. The Washington Post and Los Angeles Times were picked as members of the national prestige press. The Los Angeles Times also was chosen for its consistently good environmental coverage. The Houston Post, Miami Herald, Philadelphia Inquirer and Boston Globe were selected as representatives of large newspapers from various geographical regions of the United States. The Allentown (Pa.) Morning Call and Charlotte (N.C.) Observer were examples of medium-sized newspapers. The Seattle Post-Intelligencer, San Francisco Chronicle, Albany Times-Union, Detroit Free Press and San Jose Mercury News were used to evaluate coverage of the Alar issue in some of the largest apple-producing regions of the country.

According to a chart of "U.S. and Canada Apple Production by States, Areas and Provinces--1985-90 Estimate" from the International Apple Institute, the leading states for apple production were New York in the eastern, Michigan in the central and Washington in the western regions of the country. California was the second largest growing region in the west. However, the Los Angeles Times was not classed as an apple region newspaper because of its physical distance from California areas that grew apples.

A 33-question coding instrument was used to assess Alar coverage by the 13 newspapers. The first half of the instrument recorded general information about the coverage, such as headline and lead sentence nature, length, source data and placement within the newspaper.

The second half of the instrument recorded risk information crucial to the reporting of such an issue. This included the number of risk comparisons used and the number and source of risk figures used. Other information, such as dosage figures and mentions of scientific debate, cancer risk to adults and especially to children, also was recorded.

One person coded all 297 articles and then re-coded 40 articles drawn at random to check for coder reliability. Reliability levels ranged from 72.5 to 100 percent, with the average being 90.9 percent.

RESULTS

The 13 newspapers produced a total of 297 articles on the Alar issue during 1989. For the most part, they treated the Alar story as a hard news event, without detailed analysis of risk issues.

QUANTITY AND TYPE OF COVERAGE

The Los Angeles Times and the Seattle Post-Intelligencer produced the largest number of stories with 49 and 48 articles respectively. These newspapers were then followed in article production by three other newspapers in apple-growing regions (see Table 1). This level of coverage can be explained by the importance of the apple-growing industry in the states of Washington, California and New York. The remaining newspapers had articles ranging from 11 to 20 in number, except for the Allentown Morning Call, which only had three. (Although the Allentown Morning Call shows up in some cross-tabulated data in percentages sometimes as a strong newspaper, its small number of articles makes it an unimportant newspaper in the Alar analysis.)

Sixty-one percent or 183 of the articles were hard news stories, while 23 percent or 69 of the articles were business oriented. Feature stories made up most of the remaining articles with 8.4 percent or 25 feature stories.

There were two major departures related to the type of articles produced by the 13 newspapers. The Seattle Post-Intelligencer ran only 25 percent of its coverage as hard news, with

TABLE 1

QUANTITY OF COVERAGE OF ALAR FOR 13 NEWSPAPERS IN 1989

Newspaper Name	Number of Articles	Percent of Total Coverage	Daily Circulation*
Los Angeles Times	49	16.5	1,136,813
Seattle Post-Intelligencer	48	16.2	206,155
San Jose Mercury News	38	12.8	268,409
San Francisco Chronicle	26	8.8	599,312
Albany Times-Union	26	8.8	107,638
Washington Post	20	6.7	796,659
Philadelphia Inquirer	18	6.1	500,136
Detroit Free Press	16	5.4	648,217**
Charlotte Observer	16	5.4	218,501
Boston Globe	15	5.1	509,573
Houston Post	11	3.7	318,218
Miami Herald	11	3.7	414,500
Allentown Morning Call	3	1.0	135,571
TOTAL	297	100.2	

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*Source is the Gale Directory of Publications, 1990.
**Monday through Friday circulation figures

64.6 percent falling under business issues related to Alar. The Albany Times-Union also differed, although not to the same extent: 50 percent of its articles were news, while 30.8 percent of its articles were related to business issues. Three other newspapers, the Los Angeles Times, Houston Post and Boston Globe, devoted about one-fourth of their coverage to Alar business issues.

The Philadelphia Inquirer ran 22 percent of its coverage as feature stories, while the Albany Times-Union was the only other newspaper to have a number of features, making up 19.2 percent of its coverage. Of the 16 editorials that appeared in all newspapers, four of them were in the Seattle newspaper.

The story was strongly covered in the press from its inception in February until June when it began to taper off. Twenty-six percent of the articles ran in March and 21 percent ran in May. By the fall, coverage had dropped considerably, although there were a few peaks related to various announcements concerning apple crops and losses.

Wire services played an important role in the Alar coverage and accounted for 52.2 percent of the newspaper coverage. Local general reporters were used most often after the wires, producing 72 stories or 24.2 percent of the articles written. Syndicates, correspondents, editorial writers and local science/medical/environmental reporters averaged approximately the same percentage of articles at about 5 percent. Not surprisingly, 91.6 percent of the stories were short or medium and only 8.4 percent were long. The articles' lengths were determined by the VU/TEXT

system, which assigned each story a short, medium or long rating.

The Alar controversy received placement high in the A-section in most newspapers. Almost 12 percent of the Alar stories ran on the first page. The second largest number ran on A-3, with 6.7 percent appearing there. Overall, 20.5 percent of the articles were run on the first page of a section. This shows that the Alar debate was considered an important news event by editors.

Alar was an issue full of potential for local coverage. Because Alar was said to affect children most noticeably, a number of major school boards pulled apples and apple products from school cafeterias, a newsworthy event. There also was the opportunity to write about the local angle by interviewing supermarket customers, local health department and school officials. In apple-growing regions surrounding Seattle and in western New York, falling apple sales received much attention. Both the Los Angeles Times and "60 Minutes" added a local angle themselves by testing apples in local supermarkets for Alar residues.

Yet despite this local potential, about two-thirds of the articles did not cover local aspects of the story. This lack could be attributed to the prevalence of wire service coverage, which included anything of local significance in less than one-third of its articles.

SOURCE USE

Reflecting their short length, most stories quoted only one source in 33.3 percent of the coverage. Three sources were quoted in 19.5 percent of the articles and 16.2 percent used two

quoted sources. About 24 percent of the coverage included between four and seven sources, while 5 percent included between 8 and 13 sources. Seven articles did not include any source.

The short length of most stories and the low number of quoted sources show that the newspapers were not providing detailed analyses or information. Despite the fact that the connection between any chemical and cancer is a complex issue usually requiring much explanation for readers, most Alar articles did not go beyond a simple, factual news account of the controversy.

By examining who the media quoted most often as a source, the group that had the most influence on newspaper reporting becomes evident. As can be seen in Table 2, despite claims that the NRDC was orchestrating the media's coverage and heavily influencing the news, it was the apple industry that was the most quoted source, used that way in 19.5 percent of the articles. The EPA was the most quoted source in 15.8 percent of the coverage. In contrast, the NRDC was ranked as the most quoted source in only 6.7 percent of the articles.

Another way to look at sources is to consider which groups were covered the most frequently. The category of most covered source should not be confused with most quoted source, since coverage includes more factors than just being quoted. Because of the issue's complexity and the number of sources involved in the conflict, to assess coverage patterns, major sources were divided into four groups. The "anti-Alar" group was composed of the NRDC, consumer groups and other voices against Alar. The

TABLE 2

NUMBER AND PERCENT OF ARTICLES WITH MOST-OFTEN QUOTED SOURCES

Most Quoted Source	Number of Articles	Percent of Coverage
Apple Industry	58	19.5
EPA	47	15.8
Consumer Groups	23	7.7
State Government	22	7.4
NRDC	20	6.7
Chemical Company	19	6.4
Congress	17	5.7
Apple Growers	16	5.4
U.S. Dept. of Agriculture	14	4.7
Independent Scientists	13	4.4
Others	13	4.4
Local Government	8	2.7
Food and Drug Administration	7	2.4
Supermarkets	7	2.4
No Quoted Source	7	2.4
Other Federal Agencies	6	2.0
TOTAL	297	100.0

"apple" group included everyone in the apple industry, from individual farmers to juice companies to trade associations that were the source of many statistics used in the business coverage. The "chemical company" group consisted mainly of Uniroyal, other chemical companies and trade associations. The "government" group included local through federal government agencies of any sort. (While such combinations might have weighted one group more heavily over another by sheer numbers of organizations in each group, it was the only logical way to handle such a division.)

Again, contrary to the accusations of the chemical and apple companies, the "anti-Alar" group did not dominate the Alar coverage. Instead, as can be seen in Table 3, the government group was covered predominantly in 42.1 percent of the articles. The apple group was second, followed by the anti-Alar forces, which only received the most coverage in 17.5 percent of the articles. The chemical group was hardly heard from.

Table 3 also shows that little difference existed between wire service and local reporters on this coverage. Articles written by a newspaper's own reporters emphasized the viewpoints of the same groups as did those written by wire service reporters. Slightly more than 6 percent of all articles managed to present all four points of view, while 1 percent left out all four main groups.

TABLE 3

MOST COVERED SOURCE GROUPS IN ARTICLES BY WIRE SERVICE AND ALL COVERAGE

Most Covered Source Groups	Wire Service		All Coverage	
	Number	Percent	Number	Percent
Government	68	43.9	125	42.1
Apple	56	36.1	101	34.0
Anti-Alar	24	15.5	52	17.5
Chemical	7	4.5	19	6.4
TOTAL	155	100.0	297	100.0

BACKGROUND INFORMATION

Background information can prove important in risk issues, helping to provide context, particularly in technical areas. The newspapers studied here, like those studied for other risk issues such as the Bhopal and Chernobyl accidents, did not concentrate on background information. About 60 percent of the articles did not mention daminozide, the trade name for Alar. Only 31 percent provided any information about the chemical company that manufactured it. However, background information on the uses of Alar was given in 62.3 percent of the articles.

RISK INFORMATION

In the Alar story, where risk figures and their interpretations were the crux of the controversy, risk information was minimal. Most articles, because of their short, and sometimes business-oriented nature, did not devote attention to any more than the grossest generalizations about the risks allegedly caused by Alar.

Risk figures appeared in only 47 or 15.8 percent of the articles. The risk figure used by EPA appeared in 10.8 percent of the articles, while the NRDC risk figure was found in 7.1 percent. Only 3 percent of the articles used both to contrast opinions on this volatile issue. Wire service articles accounted for one-quarter of the 21 articles that quoted NRDC or EPA risk figures.

In some articles, mention of the controversy over the risk figures only stated that NRDC-estimated cancer risks were higher

than the EPA said they were. Others cited the complete NRDC risk figure package, saying that each year, 4,800 children under the age of six were likely to get cancer because of Alar, and that the EPA and NRDC estimates of risk differed by a power of 240.

Risk comparisons to help explain these risk figures only appeared in 11 or 3.7 percent of the articles. Only one risk comparison was found in the 155 articles from the wire services. In the few instances where risk comparisons were used, references were often vague. In one article originally written for the Seattle Post-Intelligencer and also found in the Albany Times-Union, some of controversial chemist Bruce Ames' "natural carcinogens" were listed, and said to have "higher levels of potential natural carcinogens than the treated apples." In another article, a senator was quoted as saying, "Smoking cigarettes, driving cars unsafely and using illegal drugs kill real people every day. Apples, with or without Alar, have never killed anyone. Ever."

In a risk issue, dosage and exposure levels can be critically important. As noted earlier, the number of apples children had to eat to be at risk was another part of the Alar controversy. Yet, close to 85 percent of the articles did not include information on dosage or exposure levels. The 47 stories that did include this information, usually in parts per million, generally did not give a comparative number to help readers understand just how much Alar they were ingesting.

The Los Angeles Times, however, conducted its own survey of Alar in apples in local supermarkets, and 20 percent of its articles included dosage figures. Some other newspapers picked

up the Times' survey story and reprinted or quoted from it. Wire service articles included dosage information in 16 articles.

A few of the articles based on the Times' survey included a chart of supermarkets that sold apples with Alar on them, while another article included a chart that summarized chemist Bruce Ames' claim that many naturally occurring foods contain more potential carcinogens than apples sprayed with Alar. These charts helped readers further understand the extent of Alar's risk. Other kinds of explanatory charts and graphs would have enhanced the quality of risk coverage, but only eight articles, or 5.1 percent, included this type of explanatory device.

As in any controversial risk issue, uncertainty in data played a large part in the Alar issue, as warring parties accused each other of using inaccurate data. Forty percent of the newspaper articles in some way indicated that this conflict existed, as even business articles found it easy to generalize about a difference in data interpretation without presenting the data themselves. Wire service articles represented about half of these articles.

Cancer is a powerful specter that hangs over the American people, and it was a central focus for the Alar coverage because of the chemical's potential to increase cancer risks. Cancer was mentioned in 75.4 percent of all stories, although most discussion was characterized as "brief" (less than or equal to one sentence). Cancer was even likely to be mentioned in business articles that examined the controversy's impact on the apple industry.

That this cancer could be caused in children made the issue all the more important. Forty-eight percent of articles mentioned children at risk but the actual degree of risk was, as indicated above, not often explained or given in context.

Alar is not the only food-related chemical to be accused of causing cancer. There also are other non-chemical risks to the nation's food supply including bacterial hazards such as salmonella and aflatoxin infestations. Discussing other food-borne risks could have provided context for the Alar issue, but only 15.2 percent of articles mentioned them, even though the scare about cyanide found in two grapes imported from Chile occurred nearly simultaneously with the Alar situation.

During the Alar scare, Uniroyal defended its product as safe before pulling it from the market in June. Yet, close to 60 percent of the articles did not mention or discuss the chemical company's or industry's position. Of those that did, nearly half were taken from wire services, which may have had better access to Uniroyal or industry representatives than local reporters.

NRDC's charges that the EPA was dragging its feet on pulling Alar off the market and in letting other harmful pesticides remain were a central focus of the initial "60 Minutes" television show that broke the Alar story. NRDC and "60 Minutes" implied that EPA and the government could not be trusted to protect the American food supply. Yet only about 20 percent of the newspaper articles studied included information that related to this government mistrust, and those that did only raised the issue with a brief mention.

SENSATIONALISM

Alar had all the potential for being treated sensationally and many people in government and the apple industry accused the mass media of doing exactly that. However, this study showed that this was not the case for newspapers, at least the 13 studied here.

Headlines and lead sentences were overwhelmingly neutral in this study. More than 90 percent of the headlines accompanying the Alar stories were classed as neutral, with only 3.4 percent considered alarming. About 77 percent of the lead sentences also were considered neutral, and only 11.8 percent of the leads were considered alarming.

Another way newspapers could have contributed to the uproar over Alar was to present what was termed "hysteria" examples in the study, such as reports of schools removing apples from lunch menus and people pouring apple juice down the drain. However, these newspapers showed some restraint in treating this inflammatory issue. Only one-fifth of the articles included any mention of "hysteria" actions, indicating that editors and writers saw Alar as a serious issue, but not one worth panicking readers over. These three measures suggest that any public alarm and panic over Alar probably were triggered from a source other than newspaper coverage.

DEPTH

When all aspects of an Alar story had been analyzed, a depth-evaluating label was assigned to indicate the overall

quality of coverage. While 45.8 percent of the stories were judged to be of moderate depth, using spot reporting supplemented by some background reporting, only 5.1 percent were judged to be in-depth, including news, background and explanatory information. Nearly half of the articles were of a superficial nature--just spot news coverage--clearly not providing the depth of coverage required for such a complex and important issue.

APPLE-REGION NEWSPAPERS

Cross-tabulations of the data collected in this study revealed that four out of six newspapers from the prime apple-growing states of New York, Michigan, Washington and California were more interested in and provided generally better coverage of the Alar story than newspapers in areas where apples were not grown. One provided coverage similar to non-apple region newspapers and the other, although providing overall good coverage, was not classed as an apple-region newspaper for a number of reasons.

Alar coverage in the Albany Times-Union, Seattle Post-Intelligencer, San Francisco Chronicle and San Jose Mercury News was better on most levels than that done by newspapers in non-apple regions. However, the Detroit Free Press' coverage resembled that of newspapers in non-apple regions probably due to two factors. First, Michigan is not a large apple-growing area compared to New York and Washington, and second, Detroit is an urban area and agricultural products are not high on its list of priorities. Consequently, it will not be considered an apple-

region newspaper for the rest of this discussion.

Although Seattle is a major urban area too, Washington is the leading apple-producing state in the nation and anything affecting the apple industry is going to be of major concern for the Seattle Post-Intelligencer and other newspapers there. New York also has major apple-growing areas in its western region, so Alar became an important story for the Albany Times-Union, located in the state capital. Albany also is not far away from apple-growing regions in New England.

Of the three California newspapers in this study, the San Francisco Chronicle and the San Jose Mercury News were near four of the five major apple-growing regions in the state--Santa Cruz, Sonoma, San Joaquin and Madera Counties--and they treated Alar as a major story. The Los Angeles Times, some distance from Kern County, the other major California apple-growing region in the state, sometimes had coverage that resembled the Seattle, Albany and the northern California newspapers--such as the large number of stories it printed. However, it also included characteristics of non-apple region coverage, such as covering the story in a superficial manner and using few sources. In general, it did the best of the non-apple region newspapers and, as just noted, often came close to or surpassed the apple-region newspapers on a number of coverage issues. However, three factors were considered a greater influence on its Alar coverage than its location in an apple-growing state: the size of the newspaper and its resources, its interest in California-related issues and its reputation for good coverage of environmental issues.

No other newspaper from a non-apple region showed a consistent pattern of overall good coverage of the Alar issue. The Washington Post covered the federal government aspects in more depth; the Boston Globe provided slightly more background on the issue than the others; the Houston Post devoted the largest percentage of coverage to the NRDC risk figures, conflict over the Alar issue and the government mistrust concern. The Charlotte Observer provided a few risk comparisons and also discussed other food risks more than other non-apple region newspapers. But, beyond the Los Angeles Times, no non-apple region newspaper covered the story effectively over time.

By classing the Seattle, Albany, San Francisco and San Jose newspapers as apple-region publications, this does not imply that they treated the Alar story as only a regional or local issue. Rather, they took a national issue and developed it further. As David Perlman, science editor for the San Francisco Chronicle put it, "This was a big national story that also happened in our backyard. There were articulate apple growers near here as well as articulate NRDC officials since NRDC has an office in San Francisco (14)."

On the whole, of the four apple-region newspapers, the Albany Times-Union provided the best overall coverage. This is particularly surprising given the size of the newspaper, with a circulation of little more than 100,000 daily readers compared to close to 600,000 for the San Francisco Chronicle and at least 200,000 each for the San Jose Mercury News and the Seattle Post-Intelligencer. While not at the top of every category in this

study, the Albany newspaper provided a consistently good level of coverage. Its strengths, in particular, were in the risk coverage area.

The Seattle Post-Intelligencer, provided a different type of coverage for its region, heavy on the number of articles it printed, but very light on the risk factors involved in Alar. For the most part, its coverage, like that of the Los Angeles Times, was generally superficial. The two northern California newspapers provided the middle ground between the Albany and Seattle coverage patterns.

In looking at the quantity of coverage provided, the four apple-region newspapers produced the most articles on Alar of all 13 newspapers except the Los Angeles Times. Between them, they accounted for 46.6 percent of all of the articles produced in 1989 by the 13 newspapers (see Table 1). Of the four apple-region newspapers, the Seattle Post-Intelligencer printed the most articles (48), followed by the San Jose newspaper (38) and the Albany Times-Union and San Francisco Chronicle, which each printed 26 articles. As noted earlier, both the Seattle and Albany newspapers directed a significant portion of their coverage to business aspects of the story, rather than news, as shown in Table 4, which includes a number of measures related to quality of coverage.

This table also shows that the Seattle Post-Intelligencer, used an extremely high proportion of wire service coverage, compared to all of the newspapers, while the remaining apple-region newspapers used less wire service coverage than most non-apple region newspapers. In particular, the San Francisco

Chronicle depended on the wires for only about one-third of its coverage. About 35 percent of its coverage was by local general reporters, plus it had additional local coverage by its science, medical or environmental writers.

All of the four apple-region newspapers considered the Alar story important enough to run a number of stories on page A1. Table 4 shows that the San Francisco newspaper gave the largest percentage of its coverage--more than any of the 13 newspapers--to A1 coverage. All of the other apple-region newspapers also provided a good percentage of A1 stories, more than those in non-apple growing areas. In addition, the San Francisco Chronicle ran all of its Alar coverage in its A section.

Local aspects of the Alar story were covered heavily in all four apple-region newspapers, particularly in Seattle and Albany, as shown in Table 4. In fact, the percentages for local coverage in three of the four apple-region newspapers exceeded those for all non-apple region newspapers except for a high percentage in the Allentown Morning Call, which resulted because it printed only three Alar articles.

Table 4 also shows that the Albany Times-Union included a greater percentage of long stories in its coverage than any other newspaper except the Los Angeles Times. In contrast, the Seattle newspaper included a greater percentage of short stories in its coverage than any of the other apple-region newspapers, probably because of its heavy use of wire service copy.

To develop their articles, three of the four apple-region newspapers used a number of information sources, as shown in

TABLE 4

PERCENT OF OWN ARTICLES IN VARIOUS MEASURES OF QUALITY OF COVERAGE FOR APPLE-REGION NEWSPAPERS

Newspaper	News Articles	Business Art.	Wire Services	Local Reporters	Page A-1 Art.	Local Coverage	Long Art.	Short Art.	+5 Sources	1 Source
Albany	50.0	30.8	53.8	15.4	11.5	50.0	19.2	38.5	42.2	11.5
San Fran.	84.6	3.8	34.6	34.6	23.1	38.5	11.5	30.8	30.6	23.1
San Jose	71.1	7.9	52.6	23.7	10.5	23.7	5.3	44.7	7.9	50.0
Seattle	25.0	64.6	72.9	12.5	10.4	52.1	2.1	52.1	23.0	25.0
Highest Non-Apple Newspaper	85.0 a	27.3 b	90.9 c	55.0 d	16.3 e	37.5 f	20.4 g	87.5 h	35.0 i	56.3 j

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For the non-apple region newspapers, the reference letters are directly below instead of next to the number they refer to for ease in constructing the table.

a-Represents the Washington Post; the Allentown Morning Call's 100% was discounted due to only three articles being written on Alar.
b-Represents the Houston Post
c-Represents the Houston Post
d-Represents the Washington Post; the Morning Call's 100% was again discounted.
e-Represents the Los Angeles Times
f-Represents the Detroit Free Press; the Morning Call's 100% was discounted.
g-Represents the Los Angeles Times
h-Represents the Detroit Free Press
i-Represents the Washington Post
j-Represents the Charlotte Observer

Table 4. In the Albany Times-Union, 42.2 percent of its stories quoted five or more sources, with one article quoting 12 sources. The San Francisco and Seattle newspapers also quoted five or more sources in about 30 and 23 percent of their coverage respectively. Conversely, six non-apple region newspapers, including the Los Angeles Times, used only one source in the majority of their articles. While the San Jose newspaper used only one source in 50 percent of its articles, the numbers for the other apple-region newspapers were much lower.

Of the sources they quoted, the four newspapers in apple-growing areas, relied heavily on the apple industry. In both the Seattle and San Francisco newspapers, the apple industry led the sources with 35.4 percent and 19.2 percent respectively. The second most quoted source for Seattle was the state government, while apple growers were the second most used source for the San Francisco newspaper. The Albany newspaper, being in a state capital, quoted state government officials the most frequently at 23.1 percent, followed by the apple industry. The San Jose newspaper quoted EPA officials most often, 18.4 percent of the time, followed by the apple industry.

In amount of coverage given to the various source groups, the newspapers from the apple-growing regions split. The two northern California newspapers covered the government group the most, as did seven non-apple region newspapers. Albany covered the government and apple groups equally. The Seattle and Boston newspapers covered the apple group most frequently. (The Allentown Morning Call covered the Alar, apple and government groups

equally, giving each one prominence in one article.)

In covering the views of at least three of the four major groups involved in this issue--anti-Alar factions, apple group, the chemical company and the government--the Albany Times-Union excelled by including such coverage in 53.8 percent of its articles. This figure was only exceeded by the Washington Post, which covered at least three of the four groups in 55 percent of its coverage. The Seattle newspaper provided such coverage in 25 percent of its articles, while the two northern California newspapers only did so in about 15 percent of their articles.

For two out of three measures of background information, the Albany newspaper provided the most coverage of the apple-region newspapers. The San Francisco Chronicle provided the most coverage in the other background category relating to use of Alar's chemical name. Levels of background information in the San Jose and Seattle newspapers were not only lower than those of their apple-region colleagues, but also lower on the average than those of non-apple region newspapers.

For 10 measures of risk information, as seen on Table 5, the Albany-Times Union provided the most information of the four apple-region newspapers in six of the measures, laying out all of the issues and views for its readers. The San Francisco Chronicle led in the other four measures. The San Jose and San Francisco newspapers provided the least information in three categories each, while the Seattle Post-Intelligencer gave the least information in four measures.

TABLE 5

PERCENT OF OWN ARTICLES FOR VARIOUS RISK MEASURES
FOR APPLE-REGION NEWSPAPERS

Newspapers	All Risk Fig.	NRDC Risk Fig.	EPA Risk Fig.	Risk Comp.	Dos-age	Data Con-flict	Can-cer	Child Threat	Other Food Risks	Govt Mis-trust
Albany	23.1	11.5	19.2	15.2	19.2	46.2	76.8	50.0	26.5	15.4
San Fran.	23.0	19.2	3.8	0.0	11.5	34.6	80.8	57.7	19.2	19.2
San Jose	13.1	7.9	5.3	5.2	15.8	36.8	55.3	42.1	26.4	10.5
Seattle	14.6	10.4	10.4	2.1	16.7	33.3	62.5	37.5	6.3	4.2
Highest Non-Apple Newspaper	30.0 a	9.1 b	35.0 c	12.6 d	27.3 e	63.6 f	95.0 g	72.7 h	18.8 i	54.5 j

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For the non-apple region newspapers, the reference letters are directly below instead of next to the number they refer to for ease in constructing the table.

a-Represents Washington Post; Allentown Morning Call's 66.7% discounted due to only three articles written.
b-Represents Houston Post; Allentown Morning Call's 33.3% discounted.
c-Represents Washington Post
d-Represents Charlotte Observer
e-Represents Miami Herald
f-Represents Houston Post; Allentown Morning Call's 66.7% discounted.
g-Represents Washington Post; Allentown Morning Call's 100% discounted.
h-Represents Philadelphia Inquirer
i-Represents Charlotte Observer; Allentown Morning Call's 33.3% discounted.
j-Represents Washington Post

Compared to non-apple region newspapers, these four did much better in providing risk figures and risk comparisons. Of the 47 risk figures found in the total coverage, 24 (51 percent) were present in the apple-region newspapers. Both northern California newspapers used the NRDC risk figure more often than the EPA figure, perhaps because of the location of an NRDC office in San Francisco. The only other newspaper to do this was the Houston Post. Of the 11 risk comparisons found in the total coverage, seven were in the apple-region newspapers, with four of them in the Albany Times-Union, which was the most found in any newspaper.

On five other risk measures shown in Table 5, while the apple-region newspapers, except in one instance, were not at the top of the overall coverage percentages, together these four newspapers provided 46.8 percent of the total articles on dosage or exposure rates, 42.8 percent of the articles on conflicts over scientific data, 60.9 percent of the articles on the cancer connection, 43.3 percent of the coverage on Alar's threat to children, and 55.5 percent of the coverage on other food risks. In only one risk issue, that concerning distrust of the government efforts, did the four apple-region newspapers provide significantly less coverage, only 25 percent of the articles, than the non-apple region publications.

In most of the 10 risk categories, the Albany Times-Union not only gave the most coverage of the apple-region newspapers, but its coverage also ranked among the highest of all 13 newspapers on the issues. The San Francisco Chronicle's coverage was

second best of the apple-region coverage and also ranked high in total coverage by all 13 newspapers.

Was any apple-region newspaper's coverage sensational? This would seem less likely for these four newspapers, where one might expect more reassuring coverage. Rather than be reassuring or alarming, their coverage was overwhelmingly neutral. While they did provide the majority of both alarming and reassuring headlines and lead sentences, these numbers were too small to be of consequence.

Coverage of examples of "hysterical" activities or overreactions to the Alar situation also indicated that none of the four newspapers went out of its way to create a sensational focus on the Alar story. Although the San Francisco newspaper reported on this issue in about 35 percent of its coverage, as did the Albany newspaper in about 27 percent of its coverage, the San Jose and Seattle newspapers only wrote about this issue in 15.8 and 12.5 percent of their coverage respectively.

In looking at overall depth of coverage of the Alar issue, three of the four newspapers from apple-growing areas had more than 50 percent of their articles classed as either moderate in depth or in-depth, rather than superficial. In contrast, only four out of nine non-apple region newspapers included a majority of non-superficial coverage. The non-apple region newspapers were the Detroit Free Press (75 percent not superficial), Philadelphia Inquirer (61.1 percent), Washington Post (60 percent) and Miami Herald (54.5 percent).

Of the apple-region newspapers, the Albany Times-Union again did the best, with about 65.4 percent of its coverage non-super-

ficial--the second highest of all 13 newspapers. The San Francisco and San Jose newspapers had 57.7 and 50 percent respectively of their coverage classed as non-superficial, while only 41.7 percent of the Seattle newspaper's coverage was classed this way. Of the 15 in-depth articles written by all 13 newspapers on Alar, six appeared in the apple-region newspapers. The most, four articles, were in the Los Angeles Times but this newspaper also ran nearly 60 percent of its coverage as superficial articles.

CONCLUSIONS

The Alar controversy had major ramifications for a number of groups. The apple industry estimated that it lost more than $100 million in apple sales--some say closer to $250 million for growers and another $125 million for apple processors--due to the uproar. Supermarkets found themselves confronted by customers who wanted organically grown apples and other fruits and vegetables. Some even felt forced to start testing and monitoring programs, as did some state health departments. Local consumer groups organized around this issue, particularly to help push legislation through to safeguard the food supply. Many people became more aware of the issue of pesticides on food than ever before. And, as noted earlier, confidence in the safety of the American food supply was shaken.

For the NRDC, thousands of people joined the Mothers and Others campaign, which is now an established NRDC program, with its own newsletter and staff members. Others became members of NRDC itself, filling up the organization's coffers. The publici-

ty generated was both good and bad for the environmental group, for it put the NRDC in the limelight, yet many critics complained about the public relations campaign used. These critics appear to believe that environmental groups are not supposed to use such tactics even though they are frequently used by industry and the government. Reporters objected to NRDC handing an exclusive story to "60 Minutes," and muttered about manipulation, although not too loudly.

Although Alar is no longer used on apples, the issue continues. Members of the apple industry have sued NRDC over their loss of sales. In March 1991, the Colorado Senate passed a bill extending libel protection to fruits, vegetables and other perishable food. The bill was sponsored by a representative, an apple grower, who was alarmed at "environmentalists' recent attacks on the good name of such agricultural products as apples--merely because they contained the preservative Alar." If this bill becomes law, those who cast needless doubt on the safety of various perishable agricultural products will be subject to a lawsuit for up to three times the cost of lost sales traceable to such disparagement (12).

Beyond this bill, however, is important legislation that will come before the U.S. Congress on ways to limit pesticide use on food supplies and to give the EPA and the Food and Drug Administration more power to do so. Such bills, if enacted, could bring about major changes in the way food is grown in this country.

In view of the vast impact of the Alar issue, one has to wonder just how well this far-reaching controversy was covered.

Its battleground was the pages of the nation's newspapers and magazines and the airspace allotted by television and radio. Yet, for such a major story, 297 articles in 13 newspapers is not a great deal of coverage, particularly since this coverage was spread out over a year's time. In only two weeks, five U.S. newspapers produced 397 articles on the Chernobyl accident (7); in the Bhopal coverage, two major U.S. newspapers produced during two months a total of 223 articles (23). Although the Alar situation was not an "accident," it was a major risk situation and one would have expected more coverage.

Other measures of the quality of coverage were comparable to those found in studies of the Chernobyl, Bhopal and other risk situations: event-oriented reporting, use of low numbers of sources, heavy coverage of views of government and establishment officials, extensive use of wire services and primarily short articles with little depth. This now seems to form a typical pattern for media reporting of risk issues, despite a great deal of criticism about it from media scholars and others.

As stated in numerous risk studies, background information on a complex risk issue is extremely important for helping people understand that risk. This study showed that newspaper coverage of Alar provided little background on the chemical, its origin, manufacturer, uses, and even the amounts that could be found on apples. While these particular background factors were not as critical to understanding the Alar issue as others left out in studies of risk coverage such as Chernobyl and Bhopal, they are again indicators of a set pattern of media coverage that does not

serve its readers and viewers well.

The crucial finding in this study is that the Alar controversy was not covered as the risk issue it really was. Nearly all the components of a good risk story, particularly use and interpretation of risk figures ard risk comparisons, were not included in the majority of stories. Reporters appear to have chosen to cover the conflict itself instead of the science behind the conflict. This does nothing to help readers get a rational and objective view of an important health and political story.

Is such coverage being socially responsible? If one turns to the definitions provided by the Hutchins Commission, it is not. Most of this reportage was simply a factual account of the issue and the controversy surrounding it. One could question whether reporting the controversy itself is important enough to qualify as being socially responsible. The newspapers did not ignore the issue: many played the story in their prime news section and often on the front page. Was this not enough to alert readers that there was a problem to which they needed to pay attention? Is this not a responsible way to operate?

These questions go to the heart of another issue related to social responsibility theory--that of whether the media should only inform or whether part of its role is to instruct. Most interpretations of the theory require both informing and instructing as part of social responsibility. "As the Hutchins Commission phrased it, to the press belongs the power to 'facilitate thought or thwart progress.'" The Commission also noted that "the people have the right to expect the press to present them not only with facts but also with the 'truth about the facts

(1).'" Therefore, simple factual reporting about a controversy, without explaining it and helping readers understand it, is not enough.

Also within the social responsibility theory are three functions for the media--that of being an adversary, a watchdog and an agenda-setter, according to Altschull. Yet, concerning the Alar and pesticide situation, the media, with a few exceptions, performed none of these functions before 1989 when the NRDC issued its report. Although they had occasionally covered the issue of Alar and other pesticides earlier, the media did little to investigate the situation. They did not take an adversarial stand on the issue against any organization be it environmental, governmental or industrial. As a watchdog, they should have been following how government regulation of pesticides was faring, but did not do so. As an agenda setter, they also failed. If any group put Alar on the public agenda it was the NRDC, which had to manipulate the media to bring its accusations to the public's attention.

Once the controversy broke, the media did perform these three roles, although sparingly and not in a uniform fashion. Their adversarial perspective seemed directed against the NRDC rather than the establishment government and apple industry groups. Although the NRDC had raised the Alar issue, the 13 newspapers studied gave more coverage to views expressed by the government and the apple industry. In fact, they quoted people from the apple industry almost three times more often than they quoted those from the NRDC. Government officials were quoted

only slightly less than apple industry spokespersons.

It cannot be ascertained from this study what factors were operating that caused such lopsided coverage statistics. One can hypothesize about several causes. First, there could have been a distrust of the NRDC or environmental organizations in general. Second, a symbiotic relationship between the media and power, according to Altschull. He suggests that it acts to promote the status quo and often works in the interest of the powerful (1). This too could have been operating with the Alar issue.

Third, the economic factors involved in the Alar issue could have influenced the coverage. This study showed that newspapers from regions where apples were grown covered the story differently than those from non-apple areas. Frequently, this coverage had a heavy business orientation.

However, this coverage also was more frequent, more in-depth and included more risk information. Because people in their readership areas were involved in and concerned about this situation, the apple-region newspapers displayed more of the watchdog and agenda-setting roles once the controversy was under way. They developed their own agendas for coverage of this issue and, for the most part, these agendas included providing the most information they could about the situation.

Two of the apple-region newspapers in particular showed efforts far beyond others in covering the Alar story. The Albany Times-Union, a newspaper of limited size, far surpassed the coverage of the risk aspects of Alar found in most of the larger newspapers studied. It should be commended for its efforts to explain the issues to its readers. The San Francisco Chronicle

also did a credible job in covering a wide variety of Alar concerns.

The Los Angeles Times, although a non-apple region newspaper, performed a watchdog effort by conducting its own study of Alar residues on apples in various supermarkets and publicizing the results widely.

One of the ultimate concerns of social responsibility is the media's power to influence public opinion. With environmental risk issues, there is the potential for great good and great harm. People can be alerted to avoid serious health risks, but they also can be scared unnecessarily and be turned into technology-fearing individuals. There is no question that the Alar controversy panicked many people--at least for a while--about the safety of apples and the food supply.

Many people have blamed the public's panic reaction on the sensationalism of the media coverage. However, this study showed that the coverage of at least 13 newspapers was not alarmist or sensational. Others have blamed the public panic on the pervasiveness of the media coverage orchestrated by NRDC and its public relations consultant, Fenton Communications.

NRDC officials did state on several occasions that it was not their intention to panic people or to have them stop eating fruits and vegetables. Rather, the NRDC had just wanted to alert people to what was happening concerning the food supply. Perhaps there was an over-reaction on everyone's part on the Alar issue, fueled by the emotional images invoked in the story.

Another factor for the over-reaction related to the inadequate response, at least at first, provided by the industry. According to Stenzel: "...most industry representatives were so astounded at the lack of science [being discussed about the Alar issue] that we forgot what was driving this issue. We approached it as a scientific debate, rather than the emotional crisis it was (18)."

However, despite such breast-beating, as was noted earlier, this study found that the apple industry was indeed a major actor in the Alar story as indicated by its heavy presence as both a major quoted source and a major covered source.

It is easy to blame the media for overplaying the issue, but the Alar controversy did have all of the elements of a good story--sensational charges, the "poisoned apple" imagery, celebrities galore and sustained interest in a story that built over time. It is also understandable to see why the media did not want to explain the risk information. Much of this information was highly technical, complicated and involved arguments over complex interpretations of risk assessments, animal experiments and government regulations. As Hamlin noted:

> Change and conflict and sensational charges make an interesting story. The dull, complicated technological facts of an issue do not. Part of the problem we presently face is that the regulatory system we have in place to protect our health and the environment has grown too complex to describe well on camera in a 30 second bite. Sensational charges are easy to make. Explaining why they aren't true typically takes more time than the listener is willing to invest (7).

Although Hamlin's remarks are clearly directed toward television, they also apply to newspapers. Thirty-second bites translate into paragraphs of copy. The Alar story, with its core of debate over highly scientific concerns, was very complex to tell, particularly in the small amount of space that the majority of newspapers gave to their articles. And had such information been included, many editors question whether it would have been read. Even when the social responsibility theory was first proposed, an article in Fortune magazine noted that while the Commission "seemed to be urging the press to lofty goals, it provided no insight on how to write in such a way as to avoid dullness (1)."

To surmount these problems, yet still provide the background, contextual and risk information needed for socially responsible reportage of environmental risk stories, the news media must adopt a new approach. They must recognize that news coverage alone is not enough. An important risk issue's complexity should be matched with a complex of coverage--a series of articles composed of news stories, explanatory sidebars, features and editorials that not only relate the news of the issue but help explain the value judgments, the uncertainty, the potential impacts, the economic factors, the tradeoffs in costs and benefits and the science behind the news--the risk figures, exposure statistics and risk comparisons.

Such coverage requires a number of factors. First, a environmental beat reporter is needed and this person should be educated to understand environmental risk issues and know where

to look for assistance with understanding the statistics and technical information involved. Second, he or she must be given the time to initiate as well as follow up important environmental risk stories. Third, risk coverage demands more space or airtime to fully develop and artfully write about the complex information that people need to understand. Fourth, traditional journalism constraints such as short deadlines and event orientation must not be applied to such coverage as they will only limit its quality and its ability to provide perspective for readers.

Surely editors will question why do this for environmental risk stories; what makes them more important than articles about national defense or the state of the economy? One answer is that environmental risk issues usually have widespread ramifications and they are often crucially important for the country and sometimes even the world. Yet, despite their global implications, they also affect people close to home. With the Alar issue, the impact was not in people's backyards, but in their refrigerators.

Media coverage of environmental risk issues can empower individuals to make intelligent choices or it can leave them feeling helpless to act. It can alert them to a danger or it can make them turn away from it either out of fear or out of frustration because they feel "everything is bad for them." To be truly socially responsible, the media must practice a more enlightened and environmentally caring form of journalism than it has in the past.

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